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PSYCHOLOGICAL LITERATURE.

A Treatise on Cosmology, by HERBERT NICHOLS. Vol. I. Introduction, 1904. University Press, Cambridge. Copies of this book can be purchased from the author. Address: 219 Commonwealth Avenue, Newton Centre, Mass. Price, \$3.50 postpaid.

The present review of the above mentioned book is confessedly inadequate; but the importance of the work, and the fact that private publication will be likely to delay its general circulation, warrant some preliminary account of it. Although the book has been from the press more than a year but one review of it has been noticed, and that very brief and unsatisfactory.

Dr. Nichols here attempts, on the basis of a large consideration of the present data of physics and psychology, and in the light of the historical treatment of the foundations of the philosophy of science, to construct a complete hypothesis of the general principles of all the sciences, and finally to carry out these principles in a system of cosmology that will cover the main branches of human knowledge. The present volume contains the first principles, and a partial exploitation of them within the respective provinces of physics and psychology. At least the following sciences are to be treated in future volumes: (1) physics, (2) psychology, (3) sociology, (4) ethics (5) æsthetics, (6) religion. The order in which they will appear is not clearly indicated.

The introduction contains the following sections: (1) Scope and warrant of this treatise, (2) Historical review of cosmology in physics, (3) Historical review of cosmology within philosophy, (4) Partial summary to the present, (5) Quality, (6) Quantity, (7) Changeableness, (8) Lawfulness, (9) Presentativeness, (10) Personality, (11) Reflections on these six ultimate characteristics, (12) Recensed outlines for this treatise, (13) Recension of the elements and primary laws of physics, (14) Resultant reflections.

In a word, the chief standpoint of the work is to be "the result of developing the 'intellectual order' of Lotze, the 'symbolized order' of Professor Wundt, to clear, exact, and workable statements, such as may be actually applied in the practical business of all the sciences." It is, however, more than such a development, and in some of its main assumptions, it stands over against the philosophy of Wundt.

The main result of the historical treatment of cosmology within physics and philosophy is to show the kind of a cosmical theory that we may not now construct, in the light of historical momentum. The story of the unbroken course of physical theory in the direction of the elimination of substances and entities, is made to yield the conclusion that the world of physics has been reduced to mere space and

motion. "May not this same space and motion be reduced to some conception more reconcilable with what has been learned of the problem from the mental side?" Examination of philosophical theory in its historical process of elimination and clarification brings out the conclusion that the world of psychology is a world of non-spatial, but quantitative process or actuality. The neglect of quality by physics, and of quantity by psychology has led to a separation of these two worlds in a way that can no longer be maintained; science is now, but has never until this moment been, ripe for the final union of the mental and the physical sciences.

The universe is sensationally qualitative, quantitative, changing and lawful in ways symbolized by human experiences and conceptions, yet to be more fully determined and comprehended; a world of one kind of content, the absolute knowledge of which is forever impossible; but of which all possible knowledge is contained in such experience. What then are the universal characteristics of this content? These "cosmic traits" prove to be quality, quantity, changeableness, lawfulness, presentativeness, personality. A chapter is given to each of them with a view to orientating them within philosophy and bringing them to clear light and definition. It is with quality that in the future practical physics is most largely and intimately to deal. To the discovery by James and Ward of the quantitative character of all mental content, a large place is given. The exploitation of this, in its relation to the elements of physics, is the centre of the constructive work of the treatise. Changeableness is clarified by the elimination of traditional errors, and brought to mean that "concrete quality and quantity always are specifically inseparable. If one changes, the other changes also. Any change in either is absolutely change in both. When both change there is nothing in the specific content that is not absolutely changed." Just as causality must now be used only descriptively of lawful occurrence, lawfulness must only be used descriptively of similar occurrence, that is, descriptive of successive similar occurrences concretely and actually happening. Presentativeness concerns the unique and ultimate fact of togetherness of experience. This trait is exploited as fundamental to all psychology and cosmology. A presentation is all the momentary content of one field of consciousness. Personality is really another aspect of presentativeness, the rimming of certain qualities within one presentative field. A personality then is an actually existing and presentatively isolated state of mind. The human mind is such a continuously transforming personality. But as only one state of such a transforming personality actually exists at a time, therefore, from the point of view of cosmologic existence, our personality is but the one actually existing momentary state. A personality is a body of content presentatively joined within itself, and presentatively disjoined from all other content.

The six cosmic traits are pronounced ultimate and universal; no one can be conceived to be transformed into any other. They are then considered together, with reference to their development in philosophy up to the present time. They stand for a conception of philosophy that is purged of its entities and confusions, and simplified in the light of the principle of actuality; simplicity, clearness; concreteness characterizes them. Thus far the work is critical, and negative.

Now as to the more positive and constructive part of the work, which consists of an attempt by means of these six cosmic traits to develop a simple monistic scheme into which the laws and elements both of physics and psychology can be translated, and whose princi-

ples can be applied to all sciences. No adequate presentation is possible within the limits of this review.

Chapter XII contains the outline of the hypothesis of "physical points," which constitutes a figurative time and space scheme, or system of bookkeeping, in which the events of science can be kept account of and which shall represent adequately the actual happenings that are therein symbolized. The scheme rests upon the assumption that content is quantitative and that the sum of all quantities in the universe is forever constant. The distribution of this content into personalities, however, is constantly changing. The physical point, the unit of the time and space scheme, is an imaginary "personality." All are quantitatively equal, absolutely separate, and comprise each an endless series of one definite quality following or transforming into another.

Chapter XIII (about 100 pages) contains the recension of the elements and primary laws of physics into the time and space scheme. The three primary laws of physics are: (1) Every quality, when it changes to any other quality may be regarded as changing continuously through a theoretically conceived universal, fixed, and reversible order or Scale of Change towards or from the standard norm of that scale, and all qualities may be regarded as forever tending thus to change toward that norm.

Law II. When any change occurs in any given point change occurs in every other point in such a way that motion spreads from the given point uniformly and equally in every direction of a sphere having the given point for its centre. (Motion here as everywhere in the scheme means a certain non-spatial series of events.) Law III. All qualities are forever changing and their variable distribution in the Scale of Change and throughout the universe is such that while all changes conform to Law II the sum of their scale heights is constant. These statements will indicate to the physicist something of the nature of the recension to which his data are to be subjected. In terms of these laws the common formulas and notions of physics are then worked out.

In the concluding chapter, the usefulness, and fundamental importance of the theory is declared, and the shortcomings of present conceptions, especially the doctrine of parallelism, are set forth. Here the hypothesis is brought squarely against some of the basal conceptions of Prof. Wundt's philosophy. The chief point of contention can be explained by the following quotation "This system (Wundt's) assumes two absolutely disparate sorts of causality, one a mechanical sort that governs the ultimate realm of physics, or in other words the realm of the author's sensory content; the other a psychic sort that governs the realm of the author's feelings. The two sorts are assigned different realms of activity as fundamentally separate as the two worlds of Parallelism. Universal laws, therefore, are as impossible under this assumption as under the most naive dualism.

It would be very difficult to appraise the value and the ultimate place of Dr. Nichols' hypothesis, and possibly less desirable for the moment than to look ahead to its more immediate effects. Whether or not it shall take a very high place among philosophic systems will depend of course much upon the future contributions to special science that the forthcoming volumes may be supposed to contain.

Among philosophic students of the idealistic persuasion, and the descendants of Kant in general, the effect of such a treatise is likely to be slight. It speaks a different language from theirs. Their common lack of scientific training and their preoccupation will probably prevent its leavening much their loaf. To those who believe that phi-

losophy may legitimately move on a lower plane and that its chief line of progress is to be in close relation to the development of inductive sciences, the book will come as a welcome help, possibly as a surprise. Such will agree, in the main, that the critical part of the work is sound and clear. In his constructive work the author is highly individual, and only a very long and severe testing of such an hypothesis from the standpoint of physics and psychology can enable one to decide its place. If it becomes widely known it must meet much criticism for it treats rather dogmatically some of the most central and burning problems of both sciences. The question of quantity in psychology is so new, and the notions of it so confused that the author's use of the concept as basal to his system may cast doubt upon its validity in some minds. It must be borne in mind, also, that any analysis of content that is psychologically final and complete may serve also as a basis upon which the terms of physics may be reconstructed; the fact that a quantitative psychology fits admirably the present needs of physics, is rather a proof of the general usefulness of the hypothesis than of its psychological validity.

It is doubtful whether in physics the hypothesis will gain much immediate recognition. The physicist finds his mass, length, and time so eminently usable, and he is as yet working so far from the foundations, that he may find the psychological approach to his field unattractive and too speculative and abstruse. It will be a long time before the ordinary physicist can learn to think in terms of quality. It cannot fail, however, to assure the physicist that there is a way of treating the problems of physics, that is more fundamental than the physical, and that psychology has a prior claim upon his notions. It ought forever to prevent such views about the nature of the universe as those of Reynolds being regarded as final.

The case within psychology ought to be different. The psychologist continually uses fundamental notions; and it is unfortunate but true that at the present time the fundamental notions of psychology are much befuddled; due in part, at least, to the philosophic ancestry of many of its problems and the inherited misuse of entities and complex notions. It is in such problems as those of sensational elements, analysis, synthetic unity and apperception that the work of Nichols ought to be most helpful. It points the way to a simpler, clearer, more thinkable psychology. The questions that he raises are of the most immediate importance, and whether or not one accepts his standpoint as a whole, the solutions that he offers make it imperative that his work be taken into account. The statement that the great problems of psychology are to determine what belongs to the mental state as such, and what to the brain processes outside of the field of consciousness: of those that belong to consciousness, what are presentative in nature, and what are conceptual,—brings psychology into a relation with physics and biology in a way that ought to enlighten some who are in the habit of regarding the conscious state as the beginning and end of the problems of psychology. The solutions that are suggested all along the line of psychological theory are consistent and clear. The notion of "togetherness" ought to go a long way towards reducing the confusion that has arisen or has been continued in psychology by dualistic conceptions, inadequate analysis, and misuse of doctrines of apperception and the like. The modern questions at issue between the voluntaristic and the intellectualistic psychology are brought to clear light. I repeat that the work of Dr. Nichols points the way to a clearer and simpler psychology. That is its most immediate service.

Taken altogether it is a notable book. It combines the best of German spiritualistic philosophy (with the transcendentalism left out) with the best of the English materialism, but in a manner entirely constructive. Considering it together with the biological movement in psychology it can fairly be maintained that it goes a long way toward laying the foundation for a distinctively American philosophy.

G. E. PARTRIDGE.

The Psychology of Beauty. By ETHEL D. PUFFER. Houghton, Mifflin & Co., Boston and New York. 1905.

The attempt has been made in this book to state and apply a comprehensive theory of æsthetic experience, which is based upon elementary psychological facts. The theory itself is outlined in the two chapters entitled 'The Nature of Beauty' and 'The Æsthetic Repose.' The remaining chapters of the book apply, expand and substantiate the theory. The theory itself may be best stated by the author. "Beauty is to bring unity and self-completeness into personality. . . . The personality, as dealt with in psychology, is but the psychophysical organism; and we need to know only how to translate unity and self-completeness into psychological terms. The psychological organism is in a state of unity either when it is in a state of virtual congealment or emptiness, as in a trance or ecstasy; or when it is in a state of repose, without tendency to change. Secondly, the organism is self-complete when it is at the highest possible point of tone, of functional efficiency, of enhanced life. Then a combination of favorable stimulation and repose would characterize the æsthetic feeling. But it may be said that stimulation and repose are contradictory concepts, and we must admit that the absolute repose of the hypnotic trance is not æsthetic, because empty of stimulus. The only æsthetic repose is that in which stimulation resulting in impulse to movement or action is checked or compensated for by its antagonistic impulse; inhibition of action, or action returning upon itself, combined with heightening of tone. But this is *tension, equilibrium* or *balance of forces*, which is seen to be a general condition of all æsthetic experience;" pp. 49f. Since the condition of this theory is muscular tension (for muscular tension, aside possibly from fluid or electrical tension, is the only tension of which one may properly speak in physiology), it is evident that the arts which appeal peculiarly to the eye and the ear are those alone which meet the requirement of the theory. It is, therefore the impression of the reviewer that while the theory fits in admirably with the beauty of Fine Art and fairly satisfactorily with the beauty of Music, the application of the theory to the Drama and to Literature is possible only by a vague and metaphorical use of terms.

H. C. STEVENS.

Ricerche di Psicologia: Volume primo. Laboratorio di Psicologia sperimentale, of the R. Istituto di Studi Superiori di Firenze, diretto da F. DE SARLO.

This first volume of Studies from the Florence Laboratory represents the achievement of the director and his pupils, during a little more than the first year of existence of the laboratory. While there is nothing original or even characteristic in the work, it reflects, in a general way, the present status of experimental psychology. The expressive method is the subject of two investigations; there is a quantitative study of the Müller-Lyer illusion, and a study of the perception of intervals of time. The two remaining researches are on dreams and thought transmission. There is also an account of an hallucination.